

**PENDING CLAIMS**

1. (Previously presented) A method for processing signal values comprising:  
in response to a single trellis instruction that specifies trellis state metrics for a time  $t_0$ ,  
based on the signal values, and transition metrics from time  $t_0$  to time  $t_1$ , for selected trellis states,  
a programmable digital signal processor executing the steps of:  
adding a transition metric to a first state metric for time  $t_0$  to provide a first value;  
subtracting the transition metric from a second state metric for time  $t_0$  to provide a  
second value;  
for each selected trellis state, comparing the first and second values; and  
selecting the maximum of the first and second values for each selected trellis state  
to provide trellis state metrics for time  $t_1$ , wherein the adding, subtracting, comparing and  
selecting operations are executed by the digital signal processor in response to the single  
trellis instruction.
2. (Previously presented) A method as defined in claim 1, further comprising the  
step of, for each selected trellis state, adding to the maximum value a correction factor that is a  
function of the first and second values.
3. (Original) A method as defined in claim 2, wherein the step of adding a  
correction factor comprises accessing a lookup table containing correction factors.
4. (Original) A method as defined in claim 1, wherein the trellis instruction  
implements a forward trellis function for calculating  $\alpha$  trellis state metrics.
5. (Original) A method as defined in claim 1, wherein the trellis instruction  
implements a reverse trellis function for calculating  $\beta$  trellis state metrics.
6. (Original) A method as defined in claim 1, wherein the trellis instruction  
simultaneously implements a forward trellis function for calculating  $\alpha$  trellis state metrics and a

reverse trellis function for calculating  $\beta$  trellis state metrics, using a single instruction, multiple data approach.

7-17. (Canceled)

18. (Previously presented) A processor for processing signal values, comprising:  
a memory for storing instructions and operands for digital signal computations;  
a program sequencer for generating instruction addresses for fetching selected ones of said instructions from said memory; and  
a computation block comprising a register file for temporary storage of operands and results and an accelerator for executing a trellis instruction that specifies trellis state metrics for a time  $t_0$  and transition metrics from time  $t_0$  to time  $t_1$ , wherein the trellis state metrics are based on the signal values, said accelerator comprising an adder for adding a transition metric to a first state metric for time  $t_0$  to provide a first value, an adder for subtracting the transition metric from a second state metric for time  $t_0$  to provide a second value, a comparator for determining the maximum of the first and second values for each trellis state and a data selector for selecting the maximum of the first and second values for selected trellis states to provide trellis state metrics for time  $t_1$ , wherein the adders, the comparator and the data selector of the accelerator are configured to execute the adding, subtracting, comparing and selecting operations in response to a single trellis instruction.

19-24. (Canceled)

25. (Previously presented) A processor as defined in claim 18, wherein the accelerator includes an additional adder to add to the maximum of the first and second values a correction factor that is a function of the first and second values.

26. (Previously presented) A processor as defined in claim 25, wherein the accelerator further comprises a lookup table containing correction factors.